APPENDIX F: AGRICULTURE: LAND, ECONOMY, INDUSTRY

Physical Resource Base

San Luis Obispo County has diverse physical features that affect use of land for agriculture. Physical characteristics, including topography, soils, climate, natural vegetation and water, are strongly interrelated.

Several mountain ranges and intervening valleys transect the county. Geology and topography are key factors in the formation of soils and the use of land for cropland or grazing. The usability of soils for crops depends on their depth, drainage, texture and water- holding capacity. The best soils for crops normally occur on flat or gently sloping lowlands. Soil erosion is generally a problem on moderate to steep slopes. More than 50 percent of the county has slopes exceeding 30 percent, which generally can be used only for grazing.

The climate of the coastal area west of the Santa Lucia Range is very different from that of the interior. Coastal temperatures are moderated throughout the year by humid marine air, including much foggy weather during the spring and summer. The nearly frost-free climate allows year-round production of vegetables (typically, 2 to 3 crops per year) in coastal valleys and citrus, avocados and other subtropical fruits in the foothills. In contrast, the interior of the county has hot summers and cold winters. Such conditions favor production of deciduous fruits and nuts, dry farm grain, alfalfa, and single cropping of vegetables.

The mountain ranges transecting the county create successive rain shadows to the east. The crest of the northerly Santa Lucia Range receives an average annual rainfall of 30 to 50 inches while the Carrizo Plain averages only six to eight inches. The amount of rainfall strongly influences yields of dry farm grain and hay and the growth of range grasses in different areas of the county. Most grain and hay is produced in areas of moderate rainfall such as the north-central part of the county. Open hillsides on the northerly Santa Lucia Range are the best grazing lands in the county, while dry areas and tree and brush-covered areas are the poorest. Moderate to densely-wooded areas primarily occur on the northeasterly slopes of the Santa Lucia Range and the crests and sides of other mountain ranges. Chaparral predominates on dry, southwesterly facing mountain slopes and on the poor granitic soils of the Las Pilitas area.

Irrigated agriculture is dependent on the quantity, quality and depth of groundwater. The most extensive and abundant source of groundwater is the Paso Robles Basin, underlying the northeastern quadrant of the county. The Carrizo Plain Basin is the next largest area, but water quantity and quality is poor. Expansion of irrigated uses in the Cuyama Basin is questionable since the basin is experiencing overdraft and water quality may be deteriorating. The Santa Maria Basin is the largest of the coastal basins; this and other coastal valley basins provide water for row crops and other irrigated crops. Areas of limited groundwater, mostly in the hills on both sides

of the Santa Lucia Range used for irrigated orchards and vineyards, must depend on low-production wells and drip irrigation systems to conserve water. The increasing consumption of water by urban, rural residential and agricultural uses is a major issue confronting the future use of groundwater in the county.

Sectors of the Agricultural Economy

Through 1995, cropland and grazing lands involve approximately 1,160,400 acres (including acreage in the Conservation Reserve Program) or 55 percent of the total county area (2,122,240 acres) and account for approximately 74 percent of privately-owned lands in the county. The quality of land varies widely from prime valleys used for intensive vegetable production to arid, mountainous, or tree or chaparral-covered areas limited to grazing and having a very low livestock carrying capacity. The latter areas commonly occur on large cattle ranches with land varying from well-suited to poorly-suited or unusable for grazing.

Figure F-1 shows the harvested acreage of various crops, acreage in rangeland, and numbers of farm animals from 1976 through 1995. The total harvested acreage in any given year is less than the actual production acreage because of such factors as adverse weather conditions that reduce the harvested acreage, crop/fallow rotation, and the Conservation Reserve Program, a federal subsidy program in which participating landowners leave the land idle for ten years to help restore the soils. Total agricultural acreage appears to have declined slightly during the past 20 years, although it is difficult to determine how much from the table.

The figure reflects the physical limitations as well as the agricultural diversity of the county. The total harvested cropland acreage in 1995 was approximately 11 percent of the combined total of cropland and grazing land, and irrigated cropland accounted for approximately 44 percent of the total irrigated and dry farm acreage or about five percent of the combined total for cropland and grazing uses.

Most vegetable production occurs in the coastal valleys, notably the Oso Flaco and Arroyo Grande Valleys. Lettuce and cole crops are the major crops. Irrigated field crops, mostly alfalfa and irrigated pasture, predominate in the interior valleys. The high cost of pumping water is resulting in gradual conversion to higher value crops such as vegetables and wine grapes.

The expansion of vineyards has been a major change in agricultural patterns. Harvested acreage increased from 2,962 acres in 1976 to 8,939 acres in 1995. Most of this acreage was previously used for dry farm grain production. Vineyards occur mostly on gently rolling land east of Paso Robles, west of Templeton and Paso Robles, and in the Edna Valley. Avocados, lemons and some other subtropical fruits are grown in the coastal foothills.

FIGURE F-1: AGRICULTURAL PRODUCTION (HARVESTED ACRES, NUMBERS OF ANIMALS) IN SAN LUIS OBISPO COUNTY, 1976-1995

CROP ASSOCIATION & TYPE[1]	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
IRRIGATED CROPS																				
Vegetable Crops[2]																				
Bell Peppers	539	593	605	682	462	584	444	536	599	499	585	1,020	1,134	812	717	1,000	955	1,123	1,227	1,095
Broccoli	3,825	5,270	5,481	5,304	3,909	4,197	5,153	4,315	4,313	4,176	5,510	6,658	6,607	7,363	5,575	6,950	9,952	9,564	10,359	10,578
Cabbage	239	392	632	539	1,019	1,094	770	857	577	526	468	457	563	716	991	1,340	1,457	807	842	463
Carrots	944	240	389	2,236	*	*	897	1,270	1,370	1,422	2,218	3,209	2,813	3,480	3,486	4,244	3,531	2,447	2,897	2,939
Cauliflower	761	645	962	882	625	615	588	1,009	1,234	1,690	2,643	2,547	2,261	1,923	1,854	2,202	2,078	1,500	2,131	1,726
Celery	1,402	1,139	1,547	1,332	1,269	1,267	1,359	638	1,053	890	767	796	1,053	1,156	1,113	1,313	981	1,261	1,393	1,278
Oriental Vegetables	*	*	*	*	*	647	795	812	756	735	724	868	1,261	1,378	1,215	1,399	1,120	1,421	1,009	1,551
Lettuce	6,360	6,972	10,508	9,775	9,302	9,370	9,615	10,937	10,795	10,017	9,097	8,816	9,349	9,705	10,894	10,112	9,341	9,302	8,697	8,556
Peas (edible pod)	808	891	1,228	1,045	950	1,600	2,620	3,730	4,680	3,344	4,500	4,050	3,750	4,260	3,500	2,200	1,650	2,900	2,800	3,350
Miscellaneous	1,595	1,767	2,639	2,766	2,353	2,583	2,077	2,030	2,119	1,960	2,309	2,030	2,312	2,418	2,285	2,445	1,936	1,400	1,300	1,200
Total Vegetable Crops	16,473	17,909	23,991	24,561	19,889	21,957	24,318	26,134	27,496	25,259	28,821	30,451	31,103	33,211	31,630	33,205	33,001	31,525	32,819	32,716
Field Crops																				
Alfalfa Hay	14,900	6,679	8,875	9,762	12,123	11,780	10,619	9,619	9,345	7,245	6,775	5,263	5,100	5,000	4,200	3,480	3,850	3,700	3,800	3,750
Irrigated Pasture	3,100	3,300	5,700	6,000	6,000	5,800	5,500	5,500	5,750	5,900	5,800	5,600	5,600	5,600	5,600	5,600	5,600	5,500	5,400	5,250
Sugar Beets	1,791	982	570	870	1,599	1,547	428	595	761	*	*	*	*	*	*	*	*	*	*	*
Total Field Crops	19,791	10,961	15,145	16,632	19,722	19,127	16,547	15,714	15,856	13,145	12,575	10,863	10,700	10,600	9,800	9,080	9,450	9,200	9,200	9,000
Fruit Crops																				
Avocados	396	320	408	733	737	833	843	1,523	1,523	1,340	1,340	1,300	1,299	1,320	1,220	1,165	1,165	1,135	1,090	991
Grapes (wine)	2,962	3,200	3,405	3,857	3,957	4,374	4,500	4,977	5,477	5,480	6,084	6,459	7,255	7,649	8,150	8,100	8,327	8,676	8,750	8,939
Miscellaneous	1,106	1,208	1,389	1,314	1,469	1,488	1,538	1,686	1,843	1,919	1,966	2,202	2,252	2,297	2,581	2,695	2,844	3,232	3,973	3,122
Total Fruit Crops	4,464	4,728	5,202	5,904	6,163	6,695	6,881	8,186	8,843	8,739	9,390	9,961	10,806	11,266	11,951	11,960	12,336	13,043	14,188	13,052
Seed & Nursery Stock	1,030	930	116	706	1,179	378	582	221	2,672	3,917	3,249	2,020	3,102	2,107	2,225	2,228	2,752	2,266	2,790	2,405
TOTAL IRRIGATED CROPS	41,758	34,528	44,454	47,803	46,953	48,157	48,328	50,255	54,867	51,060	54,035	53,295	55,711	57,184	55,606	56,473	57,539	56,034	58,997	57,173
NON-IRRIGATED CROPS																				
Nut Crops[3]																				
Almonds	2,796	4,450	4,730	6,394	6,184	6,154	6,079	5,979	5,979	5,949	5,000	4,911	4,782	4,299	3,299	2,799	2,400	2,400	2,200	*
Walnuts	2,623	1,366	1,136	2,727	2,853	2,853	2,853	2,775	2,975	3,054	3,054	2,962	2,962	3,073	2,970	2,770	2,890	2,700	2,700	2,700
Total Nut Crops	5,419	5,816	5,866	9,121	9,037	9,007	8,932	8,754	8,954	9,003	8,054	7,873	7,744	7,372	6,269	5,569	5,290	5,100	4,900	2,700
Field Crops																				
Barley	69,000	65,988	87,000	80,000	82,000	90,000	94,800	96,400	98,700	90,000	83,000	65,000	62,500	45,00	35,000	28,000	30,000	33,200	34,500	25,000
Garbanzos	5,894	2,498	3,485	3,834	3,842	3,600	3,401	2,403	1,100	750	2,500	1,515	715	525	*	*	1,070	1,125	605	883
Grain Hay	48,000	7,000	7,538	7,100	13,500	12,000	14,000	15,000	19,000	35,000	41,000	36,000	32,000	35,00	32,500	30,000	24,000	18,500	22,200	32,000
Safflower	580	*	3,228	4,933	4,161	4,291	2,500	3,615	1,665	2,165	4,225	2,722	2,500	1,500	750	1,600	6,140	6,400	2,040	4,010
Wheat	54,000	32,650	43,000	43,000	66,000	68,000	55,000	27,500	22,000	30,000	32,000	25,000	25,000	12,000	5,025	3,865	6,044	10,465	7,900	4,500
Miscellaneous[4]	2,654	1,686	4,533	4,415	1,810	1,800	1,820	3,700	3,861	3,800	3,730	2,795	1,500	1,200	1,245	1,600	800	1,500	1,600	1,400
Total Field Crops	180,128	109,822	148,784	143,282	171,313	179,691	171,521	148,618	146,326	161,715	166,455	133,032	124,215	23,225	74,520	65,065	68,054	71,190	68,845	67,793
TOTAL NON-IRRIGATED CROPS	185,547	115,638	154,650	152,403	180,350	188,698	180,453	157,372	155,280	170,718	174,509	140,905	131,959	30,597	80,789	70,634	73,344	76,480	73,745	73,193
TOTAL ALL CROPS	227,305	150,166	199,104	200,206	227,303	236,855	228,781	207,627	210,147	221,778	228,544	194,200	187,670	87,781	136,395	127,107	131,288	132,514	133,722	130,366
Grazing Land[5]	*	*	*	*	*	*	*	1,083,842	1,083,842	1,084,000	1,075,000	1,070,000	1,065,000	1,060,000	1,015,000	1,040,000	1,000,000	1,025,000	1,030,000	1,030,000
Livestock & Poultry (# of Animals)																				
Cattle & Calves	96,700	111,814	104,000	97,947	72,000	94,000	96,350	92,000	87,000	85,000	80,000	75,000	67,500	62,500	60,000	56,000	50,000	55,000	57,000	58,000
Hogs	8,731	3,500	8,500	8,750	8,000	7,700	7,500	5,050	6,292	4,275	4,900	3,937	3,654	4,102	4,313	4,019	4,845	3,860	2,934	2,387
Horses	274	310	290	275	295	700	1,250	1,350	1,845	2,300	2,200	3,000	3,000	*	*	*	*	*	*	*
Poultry (meat)	581,000	388,459	356,800	308,824	465,323	414,796	416,954	401,647	*	*	*	*	*	*	*	*	*	*	*	*
Sheep & Lambs	13,300	7,200	4,800	6,200	11,000	12,600	11,400	10,000	8,750	8,560	7,213	12,345	10,711	7,391	7,807	7,141	7,086	7,271	7,679	7,610

NOTES:
1. Individual crops involving 1,000 acres or more.
2. Includes double or multiple cropping on same acreage.
3. Most acreage is non-irrigated.
4. Includes some irrigated field crops.
5. Grain stubble use for grazing not included since it is a secondary use.

Source: San Luis Obispo County Agricultural Commissioner's Annual Reports

* Not tabulated or included in Miscellaneous

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Production of nursery stock and crop seed has steadily increased. Higher value activities include propagation of fruit and nut trees and vegetable seedlings, and the production of cut flowers, indoor decorative and ornamental trees and shrubs. These represent new markets for agriculture as the county population expands.

Most almond and walnut orchards in the county are dry farmed. They occur in areas where the average annual rainfall exceeds 12 inches, notably the east slopes and foothills of the northerly Santa Lucia Range and between Atascadero and Creston. Production acreage is anticipated to decrease because of competition with extensive irrigated orchards in California's Central Valley. Local dry farm production is subject to weather conditions that cause large fluctuations in harvests, and most orchards are located on small parcels whose owners may or may not maintain the orchards. Many of these lands are now being pressured for conversion to rural residential homesites.

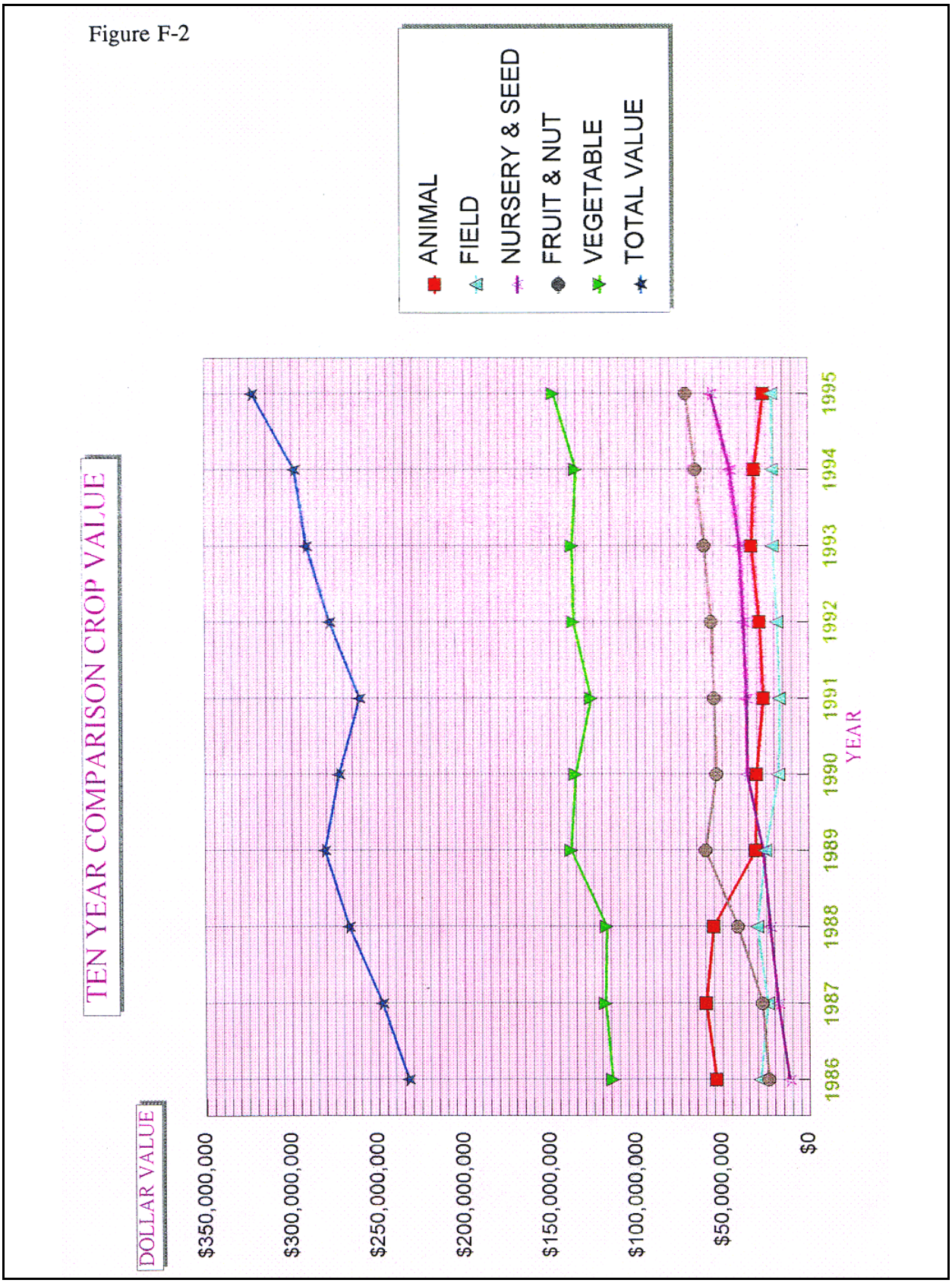
Most dry farm grain and hay is produced in the interior valleys and uplands in the northern and eastern parts of the county, including the rural areas between and surrounding Paso Robles, Templeton, Creston, Shandon and the northerly Carrizo Plain. Major crops are barley, grain hay and wheat. Grain and grain hay are also produced in the coastal valleys. It is anticipated that there will be continuing conversion of dry farm lands to vineyards and orchards where sufficient groundwater is available for irrigation. The actual acreage of land used for dry farm grain and hay is larger than indicated in Table F-1 because of crop/fallow rotation. In addition, a substantial acreage is idle because it is in the Conservation Reserve Program. Some of that acreage will be coming out of the program in the next few years, but it is not known whether the land will be returned to production or what types of crops might be established.

Rangelands for livestock grazing occur countywide. The best grazing land is on the open coastal slopes of the Santa Lucia Range in the North Coast area. Raising cattle and calves is the principal livestock operation. Approximately 75,000 acres of grain stubble land in the county is used as supplemental forage for livestock.

The raising of horses for work, pleasure, racing and show purposes contributes a significant portion of agricultural income in the county. The diversity of animal raising activities has also increased.

Figure F-2 shows the value of major classes of agricultural commodities produced in the county from 1986 through 1995. The increase is substantial even when constant dollars are used to compensate for the declining value of the dollar for the purchase of goods and services. The value of agricultural production during the 10 year period was increased by the intensification of agriculture, including technological improvements in production, establishment of vineyards and orchards on land that was previously used for production of lower value field crops, expansion of nurseries and greenhouses, and the raising of horses. Each of the five categories in Figure F-2 significantly contributes to the county's agriculture economy.

Figure F-2


TEN YEAR COMPARISON CROP VALUE
DOLLAR VALUE
$350,000,000
$300,000,000
$250,000,000
$200,000,000
$150,000,000
$100,000,000
$50,000,000
$0
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
YEAR
ANIMAL
FIELD
NURSERY & SEED
FRUIT & NUT
VEGETABLE
TOTAL VALUE

A review of the data presented in Figures F-1 and F-2 reveals some important trends about agriculture in this county, as follows:

General Trends:

Shift towards greater intensification which creates the following effects:

* Increases in the number of acres under irrigation
* Higher investment and return per acre
* Creation of more jobs and demand for related support industry
* Creation of more land use conflicts at the ag/urban interface
* Shift in market conditions and expansion of foreign markets
* Rapidly changing technology
* Improvements in irrigation technology and efficiency

Agricultural Crop Trends

Irrigated vegetables - steady increase in harvested acres and production due to:

* Increased demand for high quality, fresh vegetables
* Improvements in technology
* Fertile coastal valleys and available ground water
* Ability to hit specialty markets such as oriental vegetables and sugar peas
* Improvements in irrigation efficiency
* Greater use of multiple plantings during the growing season

Irrigated field crops - overall reduction in harvested acres due to:

* Increase in water pumping costs and poor price for alfalfa
* Loss of local marketing for sugar beets

Irrigated fruit crops - sharp increase in acreage due to:

* Excellent growing conditions and available ground water supplies
* Availability of "new ground" not previously used for vineyards or other permanent plantings
* Agriculturalists' ability to produce high quality products which increase demand
* Ability of wine grape growers to "vertically integrate" operations
* Symbiotic relationship between agriculture and tourism
* Displacement of avocado acreage from Southern California
* Improvements in irrigation technology and efficiency

Nursery Industry - steady increase in production due to:

* Excellent and available locations in the county for new operations, especially expanding greenhouses
* Moderate coastal climate and available, high quality ground water
* High local demand for products, especially vegetable transplants
* Availability of natural gas to heat greenhouses

Non-irrigated Nut Crops - reduction in acreage due to:

* Competition from irrigated acreage in the central valley
* Loss of local almond processing plant

Non-irrigated Field Crops - reduction in acreage due to:

* Conservation Reserve Program removed nearly 100,000 acres of dryland grain from production, however, this acreage could be back into production after ten year contracts expire in the late '90's.
* Poor prices for dryland grains
* Drought years of the '80's affected yields
* Disease eliminated garbanzo beans as a major crop

Grazing Land and Cattle - reduction in acreage and number of animals due to:

* Drought years of the '80's reduced available feed
* Inconsistent and weak pricing
* Reduction in dryland grain farming hurt cattle industry

While the above trends are interesting, it must be remembered that the indicated trends sometimes simplify complicated and complex changes in the agriculture industry. Therefore, it may be highly speculative to predict the future utilizing those trends.

A review of statistics compiled at the national level also gives some insight into trends about agriculture in the county. The U.S. Department of Commerce Census of Agriculture is one of the few sources of information for data related to farm operations and farm operators. Figure F-3 summarizes some of the more important data found in the Census for 1982, 1987 and 1992. The Census has altered its definitions over the years, thereby making long term comparisons of loss or gain in the number of farms or acreage somewhat difficult to evaluate. The Census defines a farm as any place of one acre or more from which $1,000 or more of agricultural products were raised and sold, or normally would have been sold, during the census year.

* Approximately 50% of all farms are smaller than 50 acres.
* Approximately 70% are smaller than 180 acres.
* Approximately 75% of farms have annual sales of less than $25,000.

* Farms with less than $25,000 in annual sales make approximately 3% of the total annual sales in the county.
* Approximately 12% of farms have annual sales of greater than $100,000.
* Farms with annual sales greater than $100,000 make up approximately 90% of the total annual sales.

Figure F-3 **U.S. DEPARTMENT OF COMMERCE**
CENSUS OF AGRICULTURE 1982-1992

1. Number of Farms	'82	'87	'92
	1754	1991	1880
• No significant trends			
2. Farmland Acreage	'82	'87	'92
	1,500,000	1,444,000	1,300,000
• Reduction in grazing and dry farm			
3. Average Farm Size	'82	'87	'92
	873	725	704
• Intensification			
4. Average Value per Farm	'82	'87	'92
	$827,000	$723,000	$1,101,000
• Intensification '87-'92			
5. Average Value per Acre	'82	'87	'92
	$905	$994	$1,519
• Intensification			
6. Farm Labor Expense	'82	'87	'92
	$20,573,000	$33,000,000	$40,000,000
• Intensification			
7. Total Farm Expense	'82	'87	'92
	Not Available	$127,000,000	$149,000,000
• Labor, especially contract labor and production inputs, especially electricity			
8. Net Cash Return	'82	'87	'92
	Not Available	$29,931,000	$29,043,000

Farm definition: Any place from which $1,000 or more of agricultural products were produced or sold, or normally would have been sold, during the census year.

Value figures not adjusted for inflation.

The Agricultural Industry and Support Uses

There is a need to provide land for agricultural industry and support uses such as confined livestock and poultry raising, specialized production of food and plants in greenhouses and other structures, and processing and packing of agricultural products in industrial facilities. Associated with agricultural production and processing is a demand for a variety of supplies and services. Supplies include farm machinery and equipment, feed, nursery stock, pesticides, fertilizers, and fencing materials. Services include the maintenance and repair of machinery and equipment, professional services, manufacturing services, and waste handling and disposal. Institutional lenders play an important role in farm economics. The availability of credit, technical advisory services and agricultural services can affect the decision of farmers to remain in agriculture.

The agriculture service industry and support uses are generally best located in urban industrial or service commercial areas, but some uses are also appropriate in agricultural production areas for both the purposes of convenience and avoiding conflict with the public. Such uses and services are essential for agricultural producers, and in turn require a critical mass of agricultural activity to economically sustain their existence.

Most agricultural commodities produced in San Luis Obispo County are packed in the fields and trucked to processing centers or markets in metropolitan areas. Exceptions include the county's wineries and some vegetable processing and packing facilities in Oceano and the nearby Santa Maria and Guadalupe areas. Barley, the leading dry farm crop in the county, is mostly transported to the Central Valley where it is used as feed for dairy cows and other livestock. The use of railroad transportation has declined in recent years due to high rail freight rates and the more competitive cost of truck transportation. Existing railroad freight loading facilities and land zoned for industrial and service commercial uses are located in San Miguel, Paso Robles, Templeton, Atascadero, Santa Margarita, San Luis Obispo, Oceano, and Guadalupe.

Most agricultural commodities produced in the county are sold on the wholesale market and are processed and/or distributed to state and national markets. However, direct local marketing includes on-farm sales of hay and livestock; sales of produce to retail grocers and restaurants; and direct sales to consumers at farmers markets, roadside stands and wine tasting rooms. Direct marketing will become increasingly important because of the potential economic advantages to small-scale farmers of handling all aspects of operations from production through marketing as well as the benefits of increasing and enhancing tourism.

Economists generally agree that the gross value of agricultural production is multiplied through the local economy by a factor of two to three times through involvement by other sectors of the economy, including industry, retail trade and commercial services. At the same time, agriculture is not as growth-inducing as other economic sectors and requires substantially fewer county services than other industries, thus agriculture contributes a net financial surplus to the county.